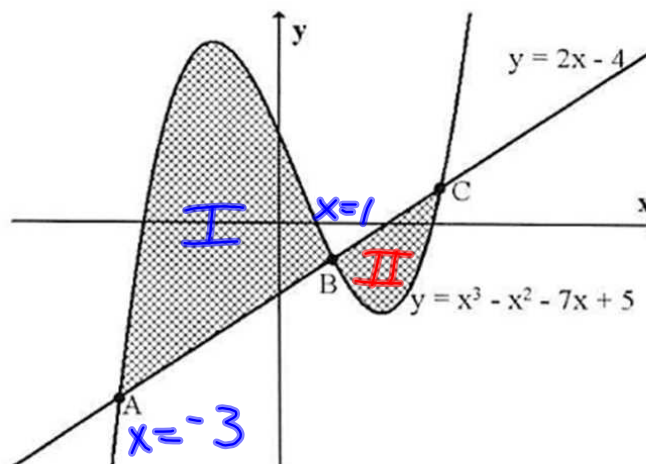


9. The curve $y = x^3 - x^2 - 7x + 5$ and the line $y = 2x - 4$ are shown opposite.
- (a) B has coordinates $(1, -2)$. Find the coordinates of A and C.
- (b) Hence calculate the shaded area.



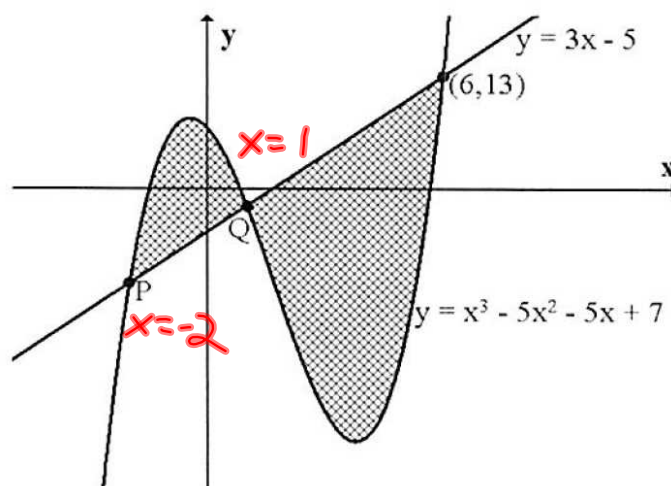
$$\text{Area I} = \int_{-3}^1 (x^3 - x^2 - 7x + 5 - (2x - 4)) dx$$

$$+ \text{Area II} = \int_1^3 (2x - 4 - (x^3 - x^2 - 7x + 5)) dx$$

$$\text{Area} = \frac{148}{3} \text{ units}^2 \checkmark$$

10. The diagram shows the line $y = 3x - 5$ and the curve $y = x^3 - 5x^2 - 5x + 7$.

- (a) Find the coordinates of P and Q.
(b) Calculate the shaded area.



$$\begin{aligned} \text{Area} &= \int_{-2}^1 (x^3 - 5x^2 - 5x + 7 - (3x - 5)) dx + \int_1^6 (3x - 5 - (x^3 - 5x^2 - 5x + 7)) dx \\ &= \frac{863}{6} \text{ units}^2 \end{aligned}$$